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LECTURE,

Introductory to the Course on

MATERIA MEDICA AND THERAPEUTICS,

IN THE MEDICAL DEPARTMENT

OF THE

IOWA STATE UNIVERSITY.

SESSION OF 1851-2.

BY A. S. HUDSON, M. D.

KEOKUK:
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CORRESPONDENCE.

Keokuk, Nov. 14, 1851.

Professor A. S. HUDSON, M. D.—

DEAR SIR:—On behalf of the Class of the College of Physicians and Surgeons of the Iowa State University, we respectfully request of you, a copy of the eloquent and instructive Introductory Address delivered by you at the commencement of the present Session, for publication; and we would here express our desire that you accede to the wishes of the Class, in which we most cordially join.

Very respectfully,

Your obedient servants,

P. VAN PATTEN, Io.
J. M. SULLIVAN, Mo.
A. V. PUTMAN, Io.
C. HELME, Ill.
CHARLES R. S. CURTIS, Io.

Committee.

Messrs. P. VAN PATTEN, J. M. SULLIVAN, and others—

GENTLEMEN: Your polite note of yesterday, asking, in behalf of the medical Class, a copy of my introductory Lecture for further publication, is received.

It is my pleasure to be at your service at all times, and in every way becoming a teacher. In complying with your request, the only reluctance I feel, is the fear that the merit of the production does not justify the commendation you are pleased to bestow upon it.

Be kind enough to convey to the Class, the sense of obligation under which their courtesy places me, and with high esteem for them and yourselves,

Believe me yours truly,

A. S. HUDSON.

Keokuk, Nov. 15, 1851.

INTRODUCTORY

TO THE COURSE OF LECTURES ON

MATERIA MEDICA AND THERAPEUTICS.

GENTLEMEN—

The steady motion of the seasons, with their stated periods, finds us once more together, about to enter upon the toils of study. Our College session is at hand. With the ordinary preparations which characterize forethought, we are ready for its duties. We enter upon them, full of that flattering hope, the pleasure of which tempers the fatigue of labor. Conscious of what is expected at our hands, a steadfast devotion has been given to the undertaking we have embraced. In our sphere we have aimed to be industrious; and knowing that industry possesses an inherent power adequate to great ends, we hail the lecture season with a feeling of joy.

At the same time, we open this session with a sadness, which does not arise from a weighty sense of responsible duties. There is a gloom in this association which our hitherto flattering prospects do not dispel. It has been an effort on the part of each member in this institution, to meet every expectation in which the medical public have been led to indulge. We desire, in no instance, to encourage anticipations which cannot be fully met. For this we labor—to meet this end, no pains within our reach will be spared. But for the success of all the inducements held out, we have trusted entirely in the ability of our own strength; as if, like the oriental pillar of cloud, the reliance was able to prevent every possibility of particular failure; as if the calamities incident to humanity, were never to afflict us. But it is in grief that we are reminded of our frailty. It becomes my painful duty to announce that, since we last met in these halls, a member of this Faculty has been taken from among our number. Doctor NICHOLS HARD, Professor of Anatomy, in the College of Physicians and Surgeons of the Iowa University, is no more. He died, on the 15th of October, at his residence in Aurora, Illinois.

His death has left a vacancy which cannot be easily filled. The character of his loss is three-fold. As a popular teacher of medical science—as a strong, observing and successful practitioner, and as a citizen, who was beloved by every friend, and respected by all who knew him, he will be lamented by friends, patrons and pupils. All mutually sympathize in the affliction the incident brings. Prof. H. was comparatively a young man. He was essentially a Western man, reared and educated in the West. He took his degree, as Doctor of Medicine, in Cincinnati; and commenced the practice of his profession in Michigan. Shortly thereafter, and at the early age at which few are called to assume the dignified robes of medical teaching, he was invited to accept a professorship in the first medical institution organized in Illinois. From thence he went to Indiana, and for several years filled, with distinguished honor, the Chair of Obstetrics in the Indiana Medical College. A little more than a year ago, he was elected to the chair of Anatomy in this institution, and became a member of its Faculty. But his connection with the Medical Department of the Iowa University was, Providentially, but brief: yet his sympathies, and all the weight of his excellent influence, were given in its behalf.

Dr. Hard was a thorough scholar, an indefatigable student, and ardently loved his profession, of which, indeed, he was one of the brightest ornaments. It was

his pride to defend the honor of Medicine, even in trying circumstances, wherein its reputation was compromised by men in high stations, and circumstances wherein the moral fortitude of most men is apt to falter, as in the crises of positive action. He cultivated medical science with the true spirit of a philosopher. He was an able and accomplished lecturer. As a Teacher he was affable, unostentatious, and delivered his instructions with rare perspicuity. He was a man of remarkably mild disposition, agreeable manners, and possessed a high toned sense of honor and moral integrity.

Cut down as he was in the meridian of life, in the full ardor of professional usefulness, and in the full enjoyment of professional eminence, the instance strengthens the belief, that "Death loves a shining mark." He has selected a worthy and useful man.

The effect of the choice here made by the fearful monster, brings more pain to us, to those left behind, than terror to the object of his sway. Dr. Hard complained not of Death's hurried visitation: he was not afraid to die. Although for years his well directed skill had been potently arrayed against the power of this, the King of terrors; yet in his own person he was prepared for the event, and his dissolution was unresisted. With singular resignation, all those talents he so often employed in behalf of other lives, were laid aside, and unemployed for his own individual safety. In serene composure, he saw the premonitions of the spirit's change,—that it was about to make a change of worlds. His mind was clear and unperturbed to his last hour.

In recording this brief tribute to his memory, we are forcibly reminded of the language he used the last time he stood in these halls. Some whom I address this evening may recollect the last words he uttered, on taking final leave of the class. He solemnly alluded to the nature of the calling they had embraced, in connection with the common destiny that awaited all men. It was in these words: "Gentlemen,—remember, the business of your lives will be to contend with the grim monster, to whom we must all sooner or later yield."

How solemn and dignified the thought, thus elegantly addressed to young men, eager in their desires to baffle death in his busy work! But how strange the coincidence, how sad the reflection, that he who uttered it should himself become the first victim!

Such, and similar events, are calculated to lead the mind which observes them into certain trains of reflection; and if there is any suggestive meaning in these coincidences, they must remind us of the uncertainty of all things earthly. But may we not indulge the hope, that the high attainments, as well as the purity of private and professional life, so strikingly illustrated in the character of our lamented colleague, may exercise a profitable influence upon us all. As colleagues, we should be benefitted by his association. As students, you will do well to imitate his virtues, and draw instruction from his worthy example.

We meet you, gentlemen of the class, this evening, merely to pass the formalities of an introduction. This we are inclined to do, not so much to appear too formal, as to practice an excellent custom, which is generally observed on such occasions,—is generally observed at the openiug of medical institutions. You are aware that whatever the nature of our inclinations, whatever strength of friendship we have, or may contract, our intercourse will be such as to render a personal acquaintance necessary. Week after week we are to meet daily. I need not say these associations are formed without regret; they are cultivated with pleasure. Indeed, I am happy to say the returning cycle of our annual course of Lectures not only introduces new individuals to our attention, but it renews the gratification arising from many former acquaintances.

Surely in this intercourse is found one of the agreeable attendants of collegiate study.

The regards thus formed do not spring wholly from *interest*. The fidelity of their exercise is natural. The common reserve of society, gives way to a profitable flexibility.

The consequences we trust this meeting may introduce, render the present an hour of much interests. From it many fast friendships may date their beginning, and to it in future time, may be referred the apprehension of some lucid thought, creditable to the profession. From this time on we commence a systematic course f inquiries into the profound principles of medical learning. We strive to poss all knowledge concerning its rules. We are to familiarize ourselves with its ements. The theories of the profession are to be sifted, doctrines to be weighd, and facts collated and adjusted in scientific order.

The quantum of time proposed for these inquiries will not be equal to the work we shall find to do. It is much easier to plan than to complete. But it is believed that the devotion of the uninterrupted period of sixteen weeks, will well nigh finish the several objects we venture to contemplate.

The few remarks I have to offer, being an introductory to my chair, it will be proper for me, on this occasion, gentlemen, to mark out the plan to be pursued, during the term, and to offer such hints thereon as are suited to the subject before us. In doing so, it will be my object, not only this evening, but throughout the session, to adhere to a style which is more commonplace than elegant;— a style more matter of fact than fanciful. In duties so extremely elementary, so didactical as ours, there is no room for display. If there is anything in the theme calculated to touch the fancy, or awaken the ideal, it would be out of place to indulge in the reverie of the inspiration. *Practical thoughts* must chiefly occupy our time. I have no inclination, in default of knowledge, to run into refined tissues of hypothetical disquisition; nor to speculate upon bootless theories. If a subject is beyond me, or too deep for me, next to its true solution, allow me sufficient fortitude to acknowledge the just distance there is between it and myself.

That branch of our collegiate course denominated Materia Medica, or Therapeutics, it is my province to teach. The chair occupies the fourth contiguous position in the scale of natural relation, which the seven chairs sustain to each other; for there is a proper numerical order,—a first, second, and third. Like Anatomy and Physiology, it is an *elementary* study, mostly composed of specific facts. And although it deals somewhat in general principles, general principles are but secondary in importance, and inferior to the specialties.

Before you are competent to prescribe, it is necessary to acquaint yourselves, first, with Anatomy; second, with Physiology and Pathology; then with Chemistry, and fourth, with Materia Medica and Therapeutics. With a knowledge of these you might be able to render service at the sick bed. Still the mastery of these four branches merely does not furnish you with what, in the United States, is esteemed a full medical education. When Theory and Practice, Surgery and Obstetrics, are appended, you should be competent to meet every case which may be presented for the exercise of your skill.

Materia Medica has for its special object the contemplation of every article, every substance or agent which can influence the vital force of the human economy. This influence directs the restoration to health, when a function has departed from its accustomed physiological standard. Those articles or agents possessing this property are found in all the kingdoms of Nature. They exist in earth, in air, and water. They are even seen in the measureless province of mind. In the list are included bodies animate and inanimate,—substances tangible and intangible, agents which are etherial and elementary; those also which are gross and combined. All quarters of the Globe are filled with therapeutic resources. Every element of the universe pays tribute to the Pharmacopea.

This teeming assemblage of medicaments we study. We contemplate them first in groups and in classes; then each separate article in itself is made a subject of recondite study, until we thus review the whole catalogue—giving, however, more attention to some articles than to others; for the dissimilarity which pervades the individual substances, when compared one with another, is infinite. There is a great variety in their degrees of strength: some are weak, some are strong; some of them are insignficant, while the virtues of others cannot be too highly extolled. Some are slightly useful, but contemptible in point of power; others possess such impetuous violence, such never failing force, as only to be exhibited with the most profound propriety, and their effects watched with trembling caution. The danger attending the use of some is nearly equal to their virtues; others are capable of doing more harm than good, while others, again, are almost daily indispensable, and at the same time almost incapable of producing a stain of injury.

The heroic power of some depends altogether on their proper application, but if erroneously exhibited, their intended good, results in unintended harm.

Others, again, when suitably directed, are endowed with Herculean energy; but if misdirected, are nearly as harmless as a child. Such are their properties.

The intrinsic worth of each drug will be set down according to its merits. If any one is exalted above another, the elevation will depend on its *merits* alone, instead of resting on a whimsical partiality. I know it has been the policy of some teachers to extol every article under notice, as merchants often do their

commodities. To extol them as the best, as superior to all others, from which you would be ready to infer the Teacher was in fact in love with them all—that he had no partiality for any one remedy, except when under immediate consideration.

Such streams of adulation cannot be indulged in, except great violence is done to truth, and an affront offered to the dignity of common candor. If I have a love for integrity I wish to exercise it in scientific truthfulness. We can tolerate the common disposition to strain the truth in ordinary business transactions; but the divine purity of science should not be contaminated with such palpable blemishes.

The above agents are your implements of practical medicine. They comprehend the materials of the healing art, or as the Latin title has it, the *Materia Medica* of the science. The motive energy of the prescription is derived from these elements. Indeed, without them, prescriptions could never be made. You might have theory but you could have no practice. You might have an objectless Anatomy and Physiology, but you would have a blind, a doubtful Pathology. Take away Materia Medica and Therapeutics, and the strong, the time-honored fort of practical medicine is gone. Surgery may be lopped off. Obstetrics may be forsaken; medical jurisprudence may be neglected, and still medicine could maintain a feeble identity and exist as a science. But take away the Pharmacopœa, and our calling would cease to be a profession. It would become shapeless, worthless and lifeless. Whatever a well bleached skeleton lacks of breathing vitality, so much would the healing art lack if this department was lost.

This much I feel it due to myself and due the department to say in its behalf. Do not suppose the present opportunity sought with avidity to raise this branch because it is mine, into unjust prominence, at the expense of the rest. My object simply is, to prevent, if possible, the further accumulation of that indifference, with which a large proportion of every medical class is apt to treat it. How often do we hear students remark, that "Materia Medica is a dry study," as if it possessed no charm, and but little use. As if it was responsible for the imputation, and as if the Chair must not only furnish them knowledge, but furnish them fresh brain perceptions. I once knew a student thus minded, who, as he thought, finished his education, and took his degree; yet he was not ashamed to say he had never looked into a volume of Materia Medica.

In dwelling upon the elements of Materia Medica, we are necessarily confined to them in most instances, as found collected and introduced into market for use. Exotic drugs more properly come under this head. Their native appoarance and history cannot afford that interest, which those indigenous to this country will invite. The natural history of all the substances we have to discuss, is not void of interest. When it is not really useful or necessary, it will at least embellish the subject, and adorn learning. The natural history of each topic will receive as much notice as their relevancy to medical science will permit. It would undoubtedly add greater interest to our subject, if we could, with propriety wander off into those Elysian fields of collateral branches of general science, as we pass them, and recreate the tired thoughts among their enlivening beauties. The digression would be entertaining, but the great end of teaching is not attained, if much time is allowed to steal from us by their allurements.

When those groups of medicinal agents are spoken of, which are procured from animals and plants, their notice will presume some acquaintance with Botany and Zoology. Yet we cannot pursue Botany, we cannot study Zoology as sciences, only so far as they concern Materia Medica and Therapeutics.

In the same way we are to treat of particular articles. Thus we come to *Iron*, as an individual medical agent; also, the various preparations of iron. These considered as one group are called *Chalybeates*. They exercise more influence in the human economy, than the position they occupy in the Pharmacopœa would indicate. Different from most all other agents, except common salt, iron has two actions. During health it plays an important part in the elaboration of healthy tissues. In disease it strengthens the declining forces of nutrition. The first action is called *Physiological*, because its energy is employed in the performance of the functions of health. The second action is called *Pathological*, because it relieves disease and assists nature's tendencies towards a healthy standard.

Finishing all that is proper to contemplate respecting iron as a medicine, we must stop and proceed to another. We are not to be enticed off in a tangent,

wrapped in the charm of every useful end it serves to mankind. We cannot even dwell upon it as a specimen of mineralogy, nor can we follow it into the world of commerce. We cannot trace it in the arts of different people, nor consider it as an element of wealth of any nation. It is to be dropped as deliberately as if its every virtue had been weighed, and all its uses set forth.

Notwithstanding we are thus circumscribed in relation to the bearing of special agents upon collateral sciences, we have a greater latitude respecting the department of medicine. Here Materia Medica has a wider range. It teaches that we are licensed to invade nearly every department in our collegiate course, and yet not transcend the limits assigned us. As medicines are collected from the great store house of created things, it is our privilege, while studying their therapeutic fitness, to have free access to the great storehouse of medical learning. No Chair is sacred. All are subject more or less to daily invasion.

The preparation of an article may lead into the field of labor belonging to one colleague. Its physiological properties will invite to another. Its poisonous or toxicological properties into a third: its therapeutic bearing into a fourth: so on. The more valuable the article, the greater is this latitude.

In illustration of this thought, let us return to that article of which we have just spoken—*Iron*. Let us notice into how many departments of professional teaching this one will lead.

1. Under the head of history and general observations upon iron and its compounds, will be seen the relation it sustains to the process which forms blood, blood plasma, and blood discs. This is a consideration belonging both to Physiology and to microscopical Anatomy.

2d. The simplest formula for the preparation of iron, is the *filings*, or the impalpable powder, which is procured by trituration. This belongs to Pharmacy.

3d. The more complex preparations, such as the salts of iron, the sulphate acetate, carbonate, &c.; are chemical preparations, and only obtained by chemical process, chemical manipulation.

4th. Its remedial, or Therapeutic uses are dwelt upon. We here show its action in disease. This leads to Theory and Practice.

5th. From theory and Practice, and the uses of iron in special diseases, the next step is to pass to Pathology, and discuss its therapeutic relations to a *class* of diseases. Thus you observe its suitability in all cases of *Anemiæ*, where there is defective nutrition. Likewise the circumstances which forbid its use, as in inflammations, and subjects in whom nutrition is in excess.

6th. Then again as a texicological agent, Iron is of great interest to the medical jurist. It is one of the most effectual antidotes to Arsenic, which is generally a fatal poison. This is in the field of Medical Jurisprudence.

Here, now, are five, and according to some divisions, six Chairs, in all of which the student enters each in regular order, while studying this one article of the Materia Medica. Yet, in no instance is he out of his sphere. He does not wander about idly. He simply traces the naturally divergent avenues of a fact. These avenues lead to reliable deductions. They are plain paths. We have no more correct, no more scientific method of exploring a truth than to follow the opening light of a fact. In this way speculation is prevented, and errors averted.

These hints, gentlemen, I doubt not, are in your mind sufficient to justify the liberty I take of invading the special territory of my colleagues. You understand these visitations are not of a meddlesome character. We do not anticipate them in any of their duties; or at most, we only anticipate them, as far as it is the province of an elementary branch, to anticipate those which are supplemental.

The order in which we propose to arrange the elements of Materia Medica, is that which appears most natural. The one we desire to adopt is called the *natural arrangement*,—an arrangement based upon the natural history of the remedies. This seems to us to be the easiest and best suited to the purposes of teaching. In the United States Pharmacopea the alphabetical arrangement has been adopted. But the alphabetical order is less scientific: it necessarily brings into juxtaposition, articles which have no natural historic connection, no chemical affinity, and no physiological relation. The best reason for this arrangement is simply its convenience; and for a text book of such every day use as the U. S. Dispensary, convenience should have weight and importance. Some authors, as A. T. Thompson, and others, aim to follow a systematic order, drawn from the physiological effects of remedies. There are many strong reasons for this classi-

fication, could it be adopted without prolixity. But the diversity of sentiment which different authors hold regarding the effect of medicines, would prevent the adoption of uniformity in their systems. As an example, notice mercury. In a physiological classification, it would be entitled to as many places as it has properties. Mercury is a stimulant or excitant to certain organs,—is a liquifacient to the general system. A liquifacient is a remedy which breaks down the plasticity of the blood, and reduces solid structures to fluids. Mercury is alterant in specific action, is somewhat sedative in large doses,—also a cathartic. It is a little tonic in small doses. To classify this substance according to its effects on the system, a question arises as to which one of the several influences, which mercury exercises on the human economy, shall be selected as the best representative of its character. All authors and teachers are not likely to hit upon the same property. Sundilin regarded its liquifacient property as the most prominent, and arranged it under the head of liquifacients. Voght, with equal judgment, placed it among the alterants. Edwards and Thomson, among the stimulants or excitants. Cullen, Eberle, and others, ranked it with the sialagogues. Thatcher with the cathartics.

Thus a classification formed on the physiological effects of remedies, though they might all be correct, would lack uniformity.

Therefore, taking one medicinal agent with another, a system based on their natural history, is subject to the fewest objections. It is one which meets with most general approbation, and the one we shall aim to follow.

After we have finished our course—have traveled over the ground—have imparted all the knowledge it is in our power to impart to you—as medical students you will have only become initiated into your pupilage—you will only have begun to study. The natural period of a life-time should constitute but a perpetual term of pupilage. You leave these halls, dismissed from under our charge: we leave you to learn more original lessons from Nature—to learn more instructive truth from her eloquent teaching—to unfold stores of knowledge yet untold.

Gentlemen: It is sincerely to be hoped that you will not lose sight of this object. You have little conception of the sapient volumes of unexplored science there are, waiting to be opened by men of genius, and read with philosophic inquiry. On your right and on your left, are fields inviting the exercise of searching thought. You need not leave the circle of your profession for a province to explore. Several of what are called orthodox doctrines of the science, which will be taught you, may not be so certain as to preclude further correction. You will hear and learn much about the nervous system, nervous action and the doctrine of reflex action, of Marshall Hall. This doctrine, which has hitherto been considered so satisfactory, self-evident and rational, is beginning to be soberly questioned. The notion that the brain is the exclusive source of volition, has been denied—denied by thinking men; and apparent facts are logically arrayed to prove that the brain is not the exclusive, the entire sensorium: but that there is a universally diffused sensorium throughout the body. This is a question as much open to your philosophic inquiry, as to Dr. Dowler's of Louisiana.

If you choose to step aside from the pale of your art, there are still other avenues of study. There is a little world below us, filled with wisdom; a world

> ——————"concealed
> By the kind art of forming Heaven,"

and which the passing dignity of man has led him to overlook. Who shall reveal it? This little world, insignificant as it appears, seems destined to overturn doctrines, and illuminate dark questions in medical science. When the microscope shall draw aside the veil which screens swarming millions of living objects from our sight, what mind can number the wonders to be told! Look at the animalculæ in water: see the infusoria in marl: observe the pestering parasites, dwelling upon both animal and vegetable life: see

> "Each liquid, too, whether it pierces, soothes,
> Inflames, offends, or exalts the taste,
> With various forms abounds."

Then will that eye have

> ——"swept at once the unbounded scheme of things,
> Marked their dependence so, and firm accord,

As with unfaltering accent to conclude,
That these availeth naught? Has it seen
The mighty chain of beings, lessening down
From Infinite perfection to the brink
Of dreary nothing?

Has it seen the cryptogamia spring to life at the rate of sixty thousand per minute, and die nearly in the same hour? Has it seen the dreadful change this contemptible life and death bring to the objects upon which they act? Truly, there are wonders beyond the gross inspection of our sight.

The cryptogamia are flowerless plants. They include mould, moss and fungous growths. They immediately followed the production of minerals, and preceded the higher plants. They are the microscopic monsters which attack the rugged oak—which feed upon majestic ships, and whose inroads upon these stupendous structures, reduce them to decay—reduce them to worthless atoms, almost like magic.

How often have unintelligent answers been given to inquiries concerning this common occurrence. Many have inquired, what can produce so rapid a change? What silent blight has smitten the firm cohesion of these fair proportions? From year to year the answer has been—They are struck with mildew; moss has gathered upon them, and each fibre fades to crumbling dust. The truth is, this mould comprehends the sum of existence belonging to this class of plants.

These effects are instances which point, with prophetic simplicity, to animal life—a higher type of organization. They typify the habits of carniverous animals, with a slight transposition of the figure. Among animals, the ravenous ones feed upon those less in size; while the cryptogamic plants feed upon the larger and more perfect ones. The one, with greedy design, pounces upon its game and carries it off: the other, locates upon its prey, fixes its brief habitation thereon, and is carried about with it. Both victims die that the invaders may live.

Let us, for a moment, look at the face of the world, at the period when this order of vegetation flourished most luxuriantly. Let us contemplate the early Geological period, when these plants, and only these, existed: when the cryptogamia, while reveling in all the exuberant thrift an undivided Earth could afford, was elaborating and fitting a dwelling place for more perfect inhabitants. They grew, many of them, to enormous sizes. They stood impenetrably dense. A warm, humid atmosphere, loaded with carboniferous vapor, and low, marshy plains, fed this gigantic vegetation. Some individuals were extremely small: others, extremely large. But what many species lacked in size, was made up in prodigious numbers. There were, at this period, no higher plants—no ripening fruit: no beautiful flowers, with their rainbow tints, bedecked the broad universe: no air-breathing animals existed; no social voice of beast, or bird, was heard. Indeed, there was no ear to hear, and no eye to see; no sound, save the congenial horrors of howling winds, broke the awful silence which brooded over the face of nature! How dark and sombre must have been those primeval forests! Their shade, how gloomy!

This seems to have been the night preceding the morning of the full creation—a season when the cryptogamia, with other physical forces, were busily engaged in the early work of disintegrating the primitive rocks, and preparing a soil for the advent of a new era—a time when monstrous ferns were towering heavenward, through the noxious air, absorbing its impurities, and preparing it for safe respiration.

How striking the contrast between that period and the present! How glorious is our day compared with that! In the "fullness of time," the era of which we speak was completed, and MAN appeared on the earth; and on the mountain top, on hill, in valley, and, still later in the world's history, over our agreeably undulating prairies of the West, are scattered from eighty to a hundred thousand different species of vegetable flora.

But the drowsy slumbers of a forming world have passed away. Through the page of history, we see, with admiring eyes, the changes time has effected. Compare them in but a few particulars:—

Now, with what blushing grace the earth is adorned: Then, the thick dullness of a gray haze prevailed:

Now, the temperate air is perfumed with the yielding fragrance from a variety of productions:

Then, unwholesome gases, emanating from dismembering minerals, mingled with the wind:

Now, the swelling notes of the feathered tribe charm the listening ear, and all nature in lucid harmony, smiles on man's estate. Each product, too, whether it be of knowledge, virtue, genius, wealth, ends or aims, all a finished world can offer, conspire to his earthly happiness.

The cryptogamia are not yet extinct, though much of their work is done. Thousands of species still exist apparently to maintain the balance between life and death,—to separate woody fibre and dead organic structures. How extensive a part they play in morbid action, we know not. It may be greater than we suspect. A large amount of the diseased action which passes our observation, is extremely mysterious at best. The subject is worthy the nicest investigation. May not these sightless agents oppose our therapeutics? May they not destroy the life forces in a manner we think not of? May not the subtle existence of the cryptogamia penetrate the ten thousand openings of the human body, locate upon vital parts, and arouse diseased action? May they not penetrate even to the circulation of the blood—that vital current to organic life—fix upon its elements, kill its living principles and generate intermittent and other fevers? In short, may not *malaria* consist in ambient clouds of cryptogamia?

These are questions for medical philosophers to solve. Of their truth as propounded, there is not yet sufficient positive proof. The evidence against the truth of them is equally if not more uncertain. The real state of the case it will be your part, is mine, is the part of every doctor of medicine to investigate—every reasoner to prove.

This, gentlemen, is the region of microscopy; and there is no computing the rich treasures of learning it may afford. What the telescope has done for the world above us, her younger sister, the microscope, has yet to do in the world below us. The telescope brings distant orbs from their stately altitudes within reach of vision. It tells the wondrous story of their whirling travels. The microscope penetrates into the secret shades of obscurity—brings to light delicate fractions of the Creator's works—gazes at infinitesimal forms, and relates the end of their being. The telescope introduces to the mind of man, objects of such lofty proportions as to cast frowning reflections upon his own inferiority. He is ready to esteem himself nothing in view of their vastness—to believe that the might of his own power is but a toss of the head, compared with the measure of their influence upon earth, and compared with the majesty of their mission. He is humiliated with the thought of the amazing disproportion there is between their destiny and his. The microscope, on the other hand, stoops low into dark abodes filled with despicable shapes, and turns its searching sight to scan the just proportions of a floating *atom*. Seeing their paltry ways are not 'past finding out,' and seeing a necessary link in the great chain of being admirably answered in their stupid existence, man's humility abates. His wonted sense of dignified superiority returns. He concludes that his dominion, though limited, is after all, undiminished. With pride, he begins to congratulate himself, that he is still 'Lord of Creation.'

There is a moral in these lessons, as well as science: moral instruction taught by contrast. Let us advert to their indications, and note their meaning:

One lesson teaches humility—teaches that man is to set proper limits to the estimate of himself—that he is too deficient to be proud, and that he has too much to learn to be arrogantly satisfied with his own excellence.

The other teaches that his is a higher destiny, a nobler aim, than objects below him. It shows that, to lose his strength, by cherishing heavy thoughts about his own nothingness, is derogatory to his natural eminence, and to a being created in the image of God.

Combine the two lessons, and he cannot fail to see his true standing as in a glass. They show him, on the one hand, forces beyond his reach, and which he cannot control: on the other, trivial energies, which he despises to govern. They teach his independent existence, and, at the same time, indicate his menial connection with inferior objects. They teach him to look for an ultimate association with other and higher intelligences: yet, in mockery, they mortify all his intellectual pretensions: that while he obeys the seasons, and exercises conforming self-accommodation to their vicissitudes, he has power and privilege to reduce restless el-

ements to the purposes of his will: yet, often, for a slight infraction of the laws governing these elements, his life is the ready penalty. They teach, he has a race to run; that while intelligence, dominion, power and excellence are among his growing virtues, his energies should centre in one expressive plan—to do the work of his sphere: that by a wise discretion, and the steady exercise of prudent efforts—even with erring abilities—he will attain eminence and honor, and accomplish the end of his being.

Gentlemen, time fails me to follow out these reflections. I must pause, and take my leave.

In a hurried introductory to my course, I have but merely alluded to the boundless fields of inquiry yet unexplored. Be not, let me entreat you, too easily satisfied with present attainments. The dry handful of knowledge we aim to offer, is nothing to what lies before you, and which it is your privilege to possess;—nothing to what the sedate contemplation of a prolific genius may, from year to year, bring forth.

The work, it is true, is arduous. Obstacles may pile up mountain high. But remember they are more stupendous to the eye, than to the will. Remember, that as your enthusiasm becomes enlisted, and your labors productive, formidable impediments fade away. Let your encouragement be strengthened by the example and labors of those who have gone before you; those who have repeatedly met the embarrassments you encounter, and who have left behind them monumental records of useful lives. The avails of their labor we have. The paths they trod are still visible. We behold their foot-prints in the ground they traversed, and the impressions serve to guide the faltering steps of a succeeding generation. They will guide your steps to fields of inquiry, and may we not hope to honorable renown.

We are certainly favored in this respect. "We are fortunate heirs of time." We are favored with the wisdom of predecessors, which, descending to us through the lap of time, adds to the comforts, and alleviates the calamities of the human race. The knowledge wrought out by them, forms our judgment, and gives foresight to our perceptions. Their lessons have exalted our aims—have augmented our happiness, and refined our pleasures. Their discoveries have lessened the ills, soothed the pains, and lengthened the brief term of life allotted to man.

Being thus fortunate recipients of conscious wisdom, gleaned from former times, its worth should not only make us stronger and better men, but its spirit should inspire each active mind with firm resolves to bequeath similar blessings to those who follow us. And, inasmuch as the possession of this useful and scientific lore connects us with the Past, so in turn it is but responding grace to extend the increasing gift, and link *our* name with the coming Future.